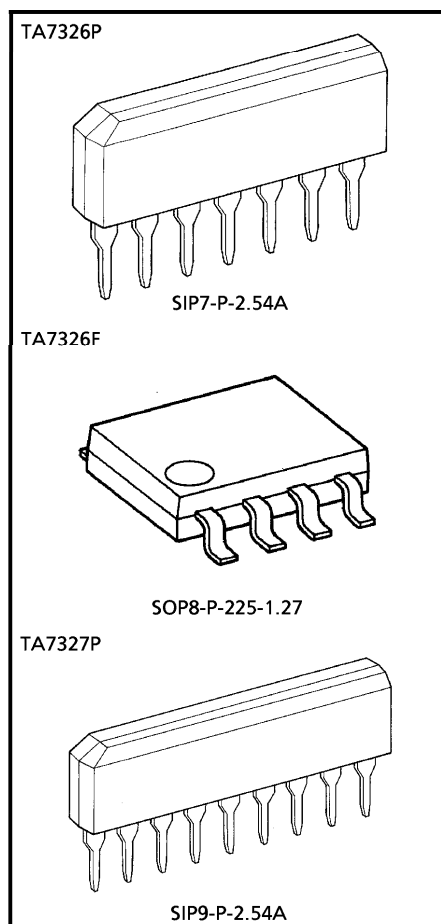


TENTATIVE TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

**TA7326P, TA7326F, TA7327P****CR TIMER****FEATURES**

- I<sup>2</sup>L IC with 12-stage binary counter.
- Built-in initialize circuit.
- Built-in Voltage regulator.
- Operates in both timer and oscillator modes.
- Excellent temperature stability.
- TA7327P has initial adjustment terminals of timing.

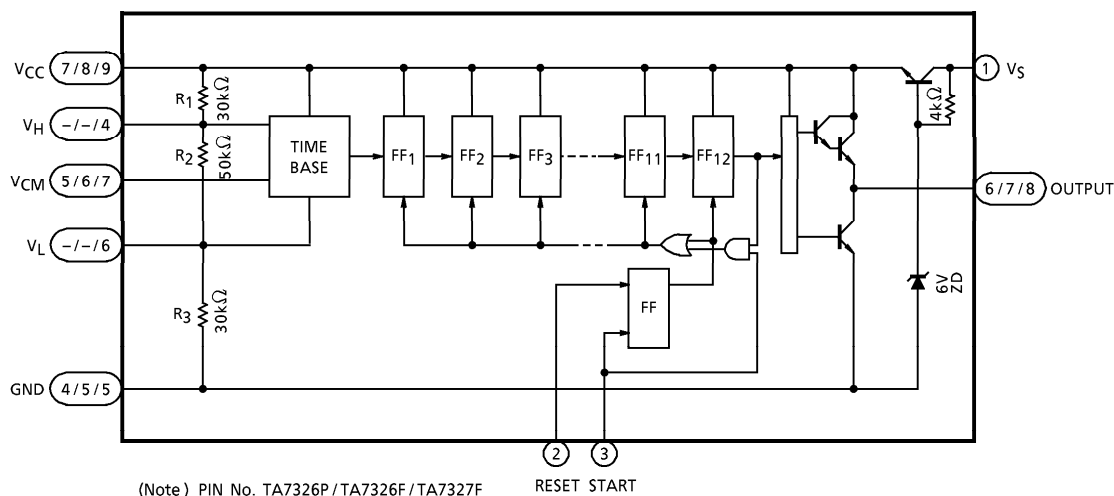


Weight	
SIP7-P-2.54A	: 0.7g (Typ.)
SOP8-P-225-1.27	: 0.1g (Typ.)
SIP9-P-2.54A	: 0.9g (Typ.)

980910EBA2

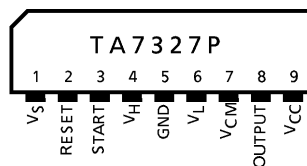
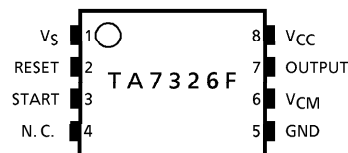
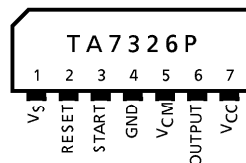
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- The products described in this document are subject to the foreign exchange and foreign trade laws.
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- The information contained herein is subject to change without notice.

BLOCK DIAGRAM



PIN CONNECTION

PIN No.	CONNECTION		
	TA7326P	TA7326F	TA7327F
1	V <sub>S</sub>	V <sub>S</sub>	V <sub>S</sub>
2	RESET	RESET	RESET
3	START	START	START
4	GND	N.C.	V <sub>H</sub>
5	V <sub>CM</sub>	GND	GND
6	OUTPUT	V <sub>CM</sub>	V <sub>L</sub>
7	V <sub>CC</sub>	OUTPUT	V <sub>CM</sub>
8	—	V <sub>CC</sub>	OUTPUT
9	—	—	V <sub>CC</sub>



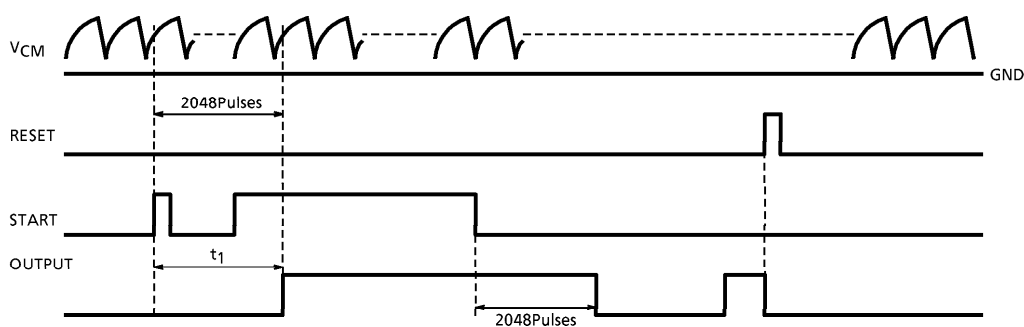
TRUTH TABLE

MODE	INPUTS		OUTPUT
	RESET	START	
1	H	(*)	L
2	L	H	COUNT, OSCILLATOR MODE
3	L	H	HOLD "H", TIMER MODE
4	L	L	HOLD LAST STATE

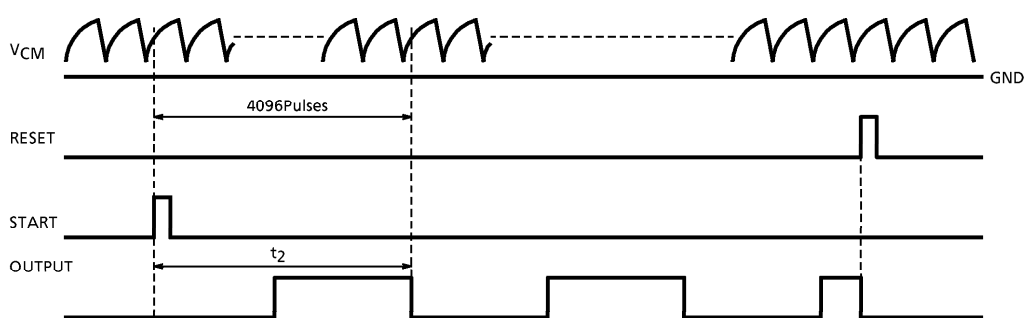
(\*) H or L  
Output equal "L" when power on.

TIMING CHART

- Timer mode



- Oscillator mode



## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V <sub>S</sub>	12	V
Supply Voltage		V <sub>CC</sub>	7	V
Input Voltage		V <sub>IH</sub>	20	V
Output Current		I <sub>OH</sub>	-30	mA
		I <sub>OL</sub>	2	
Power Dissipation (Note)	TA7326P, TA7326F	P <sub>D</sub>	400	mW
	TA7327P		600	
Operating Temperature		T <sub>opr</sub>	-20 ~ 75	°C
Storage Temperature		T <sub>stg</sub>	-55 ~ 125	°C

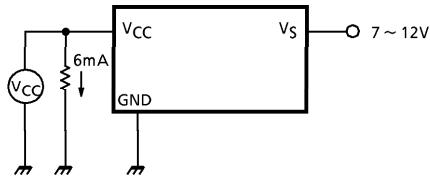
(Note) Derated above Ta = 25°C in the proportion of 4mW/°C for TA7326P and 6mW/°C for TA7327P.

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

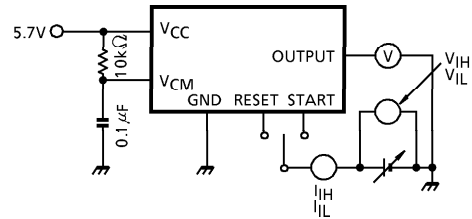
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage		V <sub>S</sub>	—	Ta = -20 ~ 75°C	7	—	12	V
Supply Voltage		V <sub>CC</sub>	1	V <sub>S</sub> = 7 ~ 12V, I <sub>CC</sub> = 6mA	5.0	—	6.3	V
Supply Current		I <sub>S</sub>	2	V <sub>S</sub> = 12V	—	2	5	mA
Input Bias Current		I <sub>I</sub>	3	V <sub>CC</sub> = 5.7V	—	—	0.35	μA
Input Voltage	"H" Level	V <sub>IH</sub>	4	V <sub>CC</sub> = 5.7V	2.5	—	—	V
	"L" Level	V <sub>IL</sub>	4	V <sub>CC</sub> = 5.7V	—	—	1.5	V
Input Current	"H" Level	I <sub>IH</sub>	4	V <sub>CC</sub> = 5.7V, V <sub>IH</sub> = 2.5V	—	—	0.25	mA
	"L" Level	I <sub>IL</sub>	4	V <sub>CC</sub> = 5.7V, V <sub>IL</sub> = 0V	—	—	-1	μA
Output Voltage	"H" Level	V <sub>OH</sub>	5	V <sub>CC</sub> = 5.7V, I <sub>OH</sub> = -30mA	3.5	—	—	V
	"L" Level	V <sub>OL</sub>	6	V <sub>CC</sub> = 5.7V, I <sub>OH</sub> = 1mA	—	—	0.3	V
Temperature Coefficient of V <sub>CC</sub>		ΔV <sub>CC</sub> / ΔTa	—	V <sub>S</sub> = 10V, Ta = -20 ~ 75°C	—	5	—	mV / °C
Temperature Coefficient of Timing		Δt / ΔTa	—	V <sub>CC</sub> = 5.7V, Ta = -20 ~ 75°C, C <sub>t</sub> = 100 μF, R <sub>t</sub> = 10kΩ	—	200	—	ppm / °C
Timing Drift with Supply Voltage Ratio		Δt / ΔV <sub>CC</sub>	—	V <sub>CC</sub> = 5.0 ~ 6.3V, C <sub>t</sub> = 100 μF, R <sub>t</sub> = 10kΩ	—	0.5	—	% / V
Timing Resistance		R <sub>t</sub>	—	—	1	—	1000	kΩ

TEST CIRCUIT

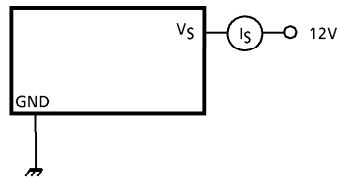
1.  $V_{CC}$



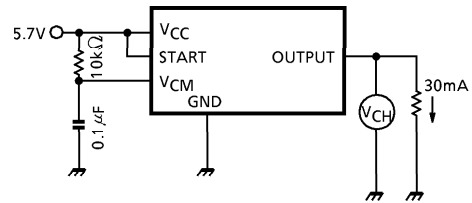
4.  $V_{IH}$ ,  $V_{IL}$ ,  $I_{IH}$ ,  $I_{IL}$



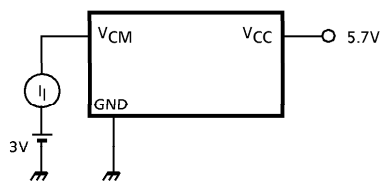
2.  $I_S$



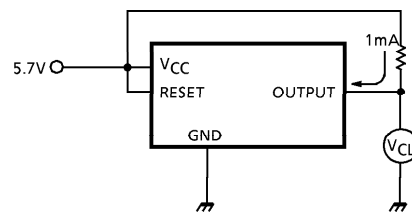
5.  $V_{OH}$

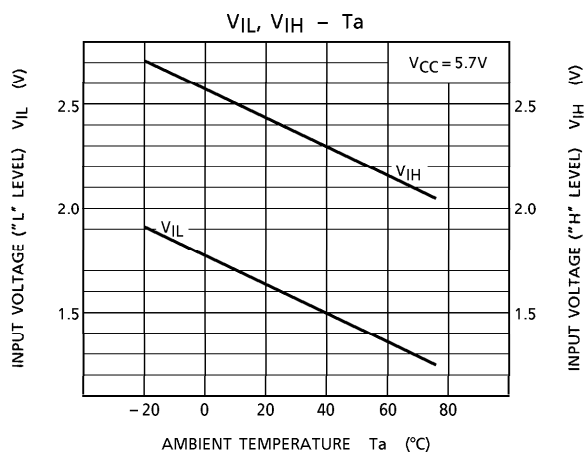
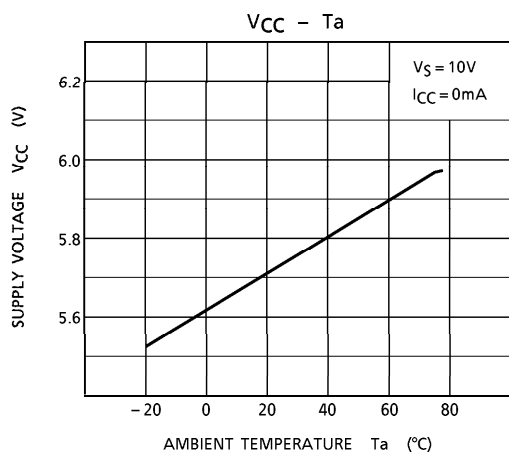
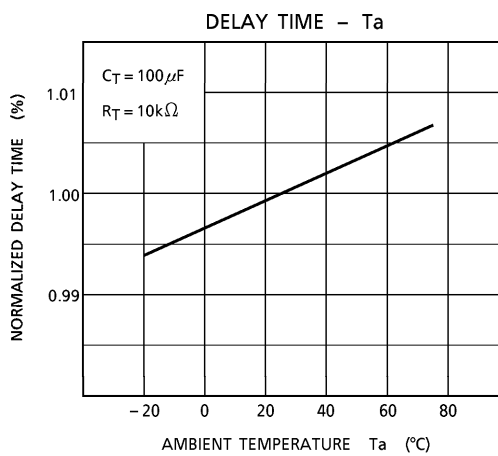
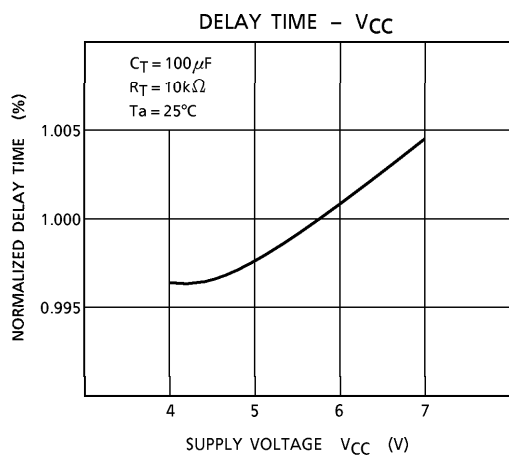
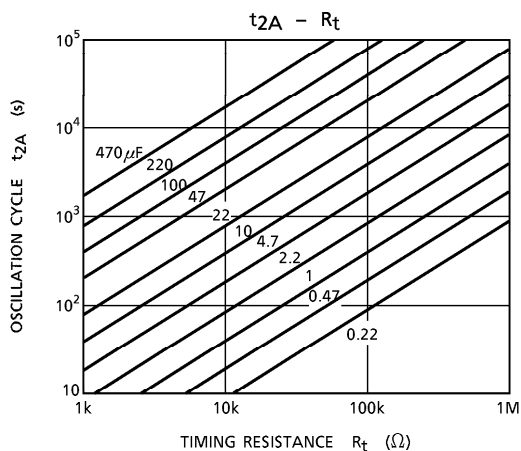
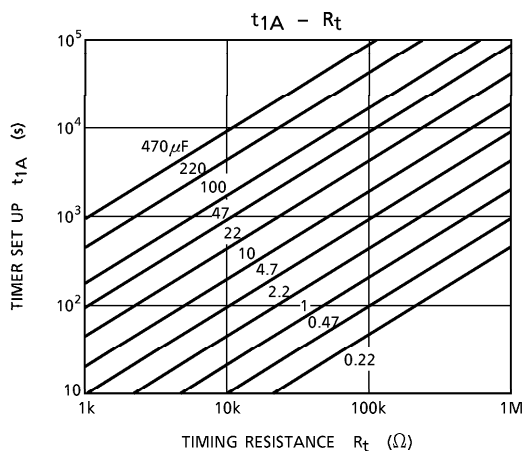


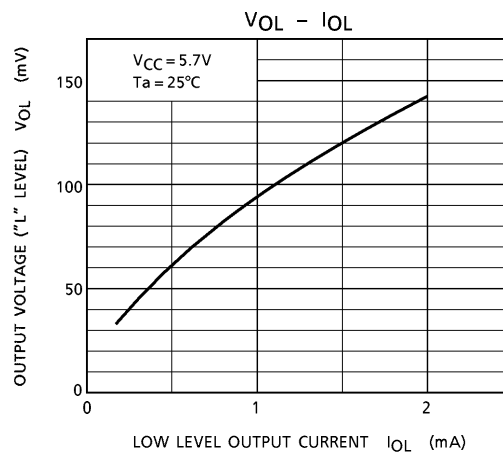
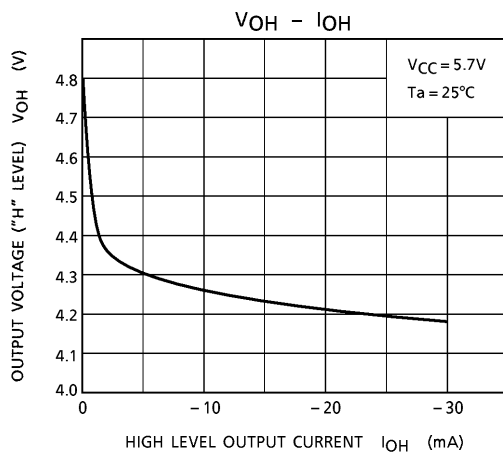
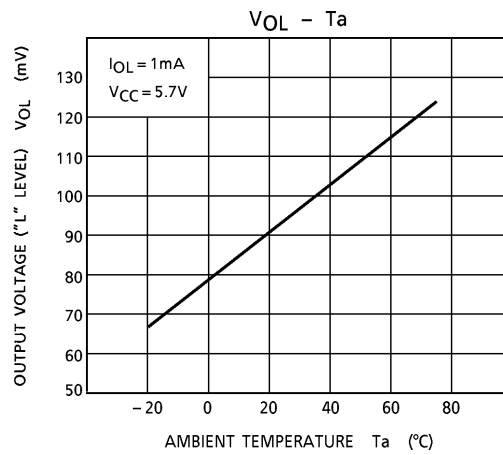
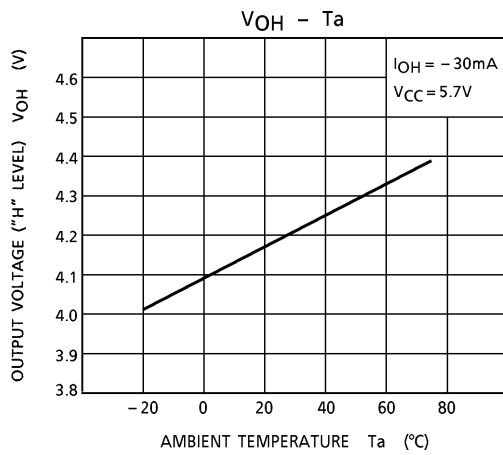
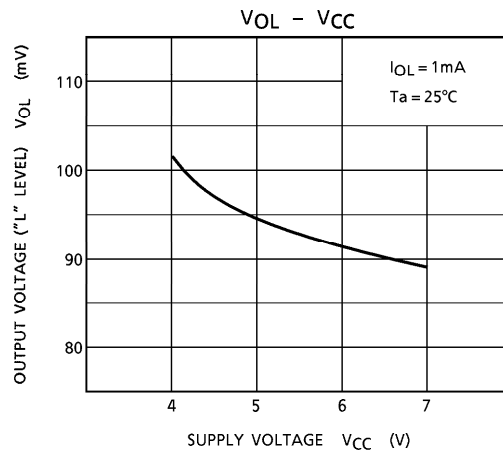
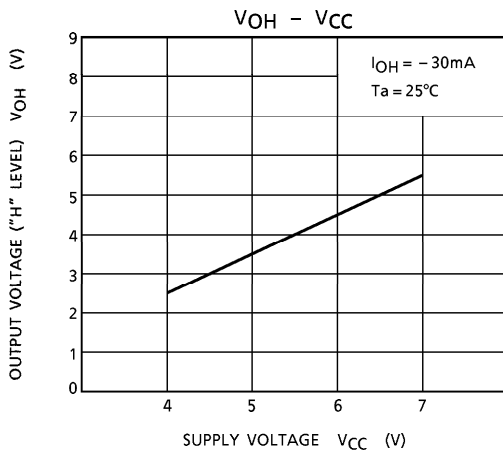
3.  $I_I$

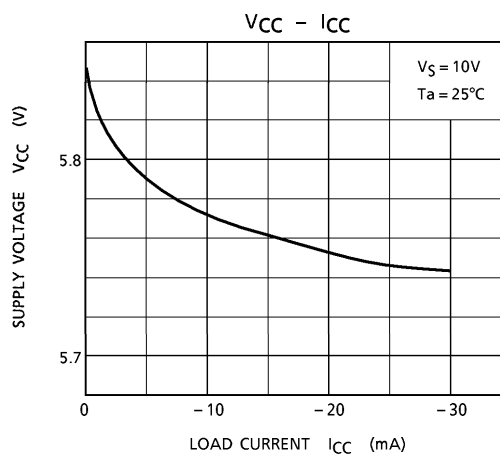
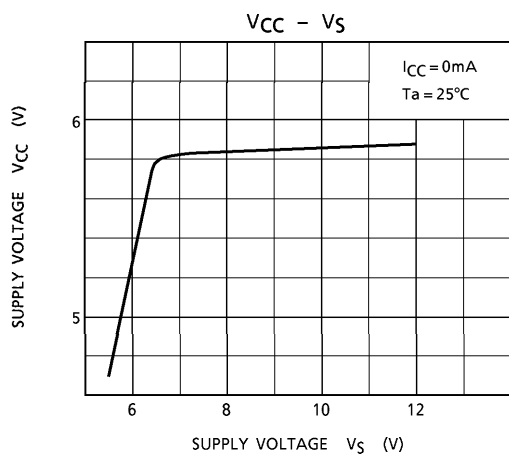


6.  $V_{OL}$





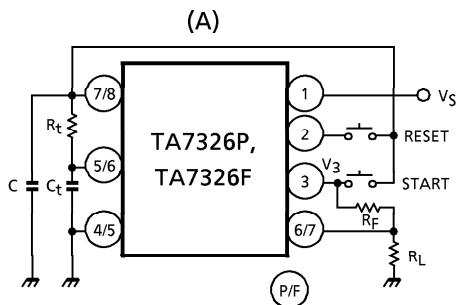




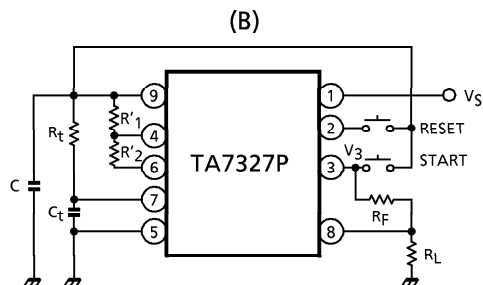


APPLICATION CIRCUIT (Ta = 25°C)

Timer mode

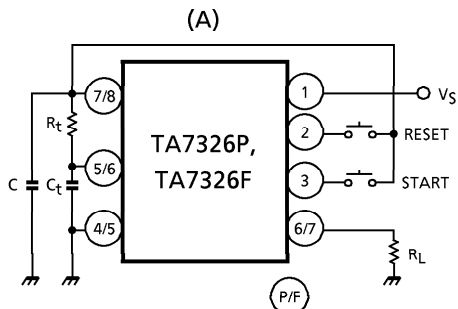


$C = 1 \sim 10 \mu\text{F}$   
 $V_3 > V_{IH}$   
 $t_{1A} \approx 2048 C_t \cdot R_t \text{ (s)}$   
 $C_t : \text{(F)}$   
 $R_t : \text{(\Omega)}$

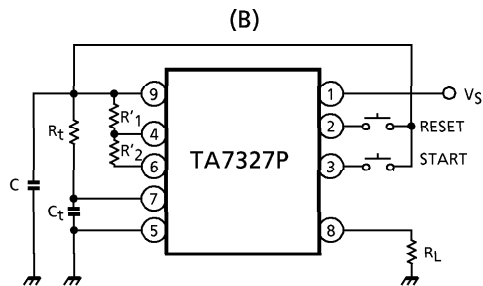


$C = 1 \sim 10 \mu\text{F}$   
 $V_3 > V_{IH}, V_H < V_{CC} - 1\text{V}, V_L > 1.2\text{V}$   
 $t_{1B} = 2048 C_t \cdot R_t \left| \ln \frac{r_1}{r_1 + r_2} \right| \text{ (s)}$   
 $C_t : \text{(F)}$   
 $R_t : \text{(\Omega)}$   
 $r_1 = R_1 // R'_1, R_1 = 30\text{k}\Omega$   
 $r_2 = R_2 // R'_2, R_2 = 50\text{k}\Omega$

Oscillator mode



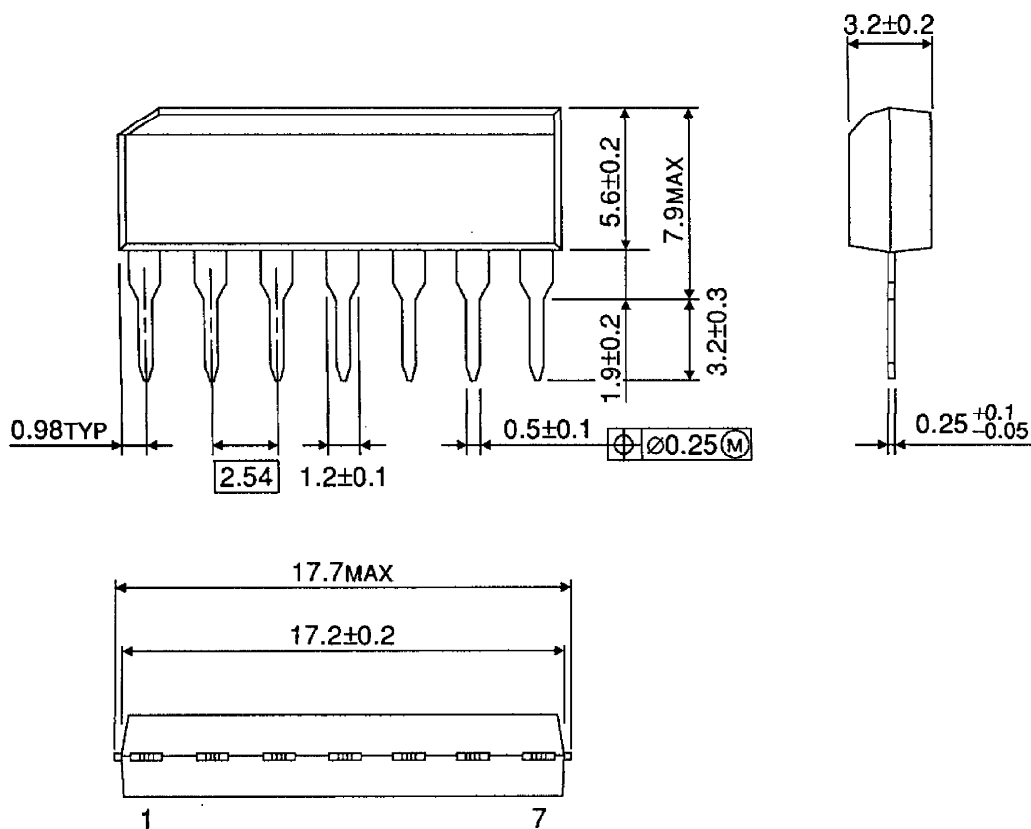
$C = 1 \sim 10 \mu\text{F}$   
 $t_{2A} \approx 4096 C_t \cdot R_t \text{ (s)}$   
 $C_t : \text{(F)}$   
 $R_t : \text{(\Omega)}$



$C = 1 \sim 10 \mu\text{F}$   
 $V_H < V_{CC} - 1\text{V}, V_L > 1.2\text{V}$   
 $t_{2B} = 4096 C_t \cdot R_t \left| \ln \frac{r_1}{r_1 + r_2} \right| \text{ (s)}$   
 $C_t : \text{(F)}$   
 $R_t : \text{(\Omega)}$   
 $r_1 = R_1 // R'_1, R_1 = 30\text{k}\Omega$   
 $r_2 = R_2 // R'_2, R_2 = 50\text{k}\Omega$

**OUTLINE DRAWING**  
SIP7-P-2.54A

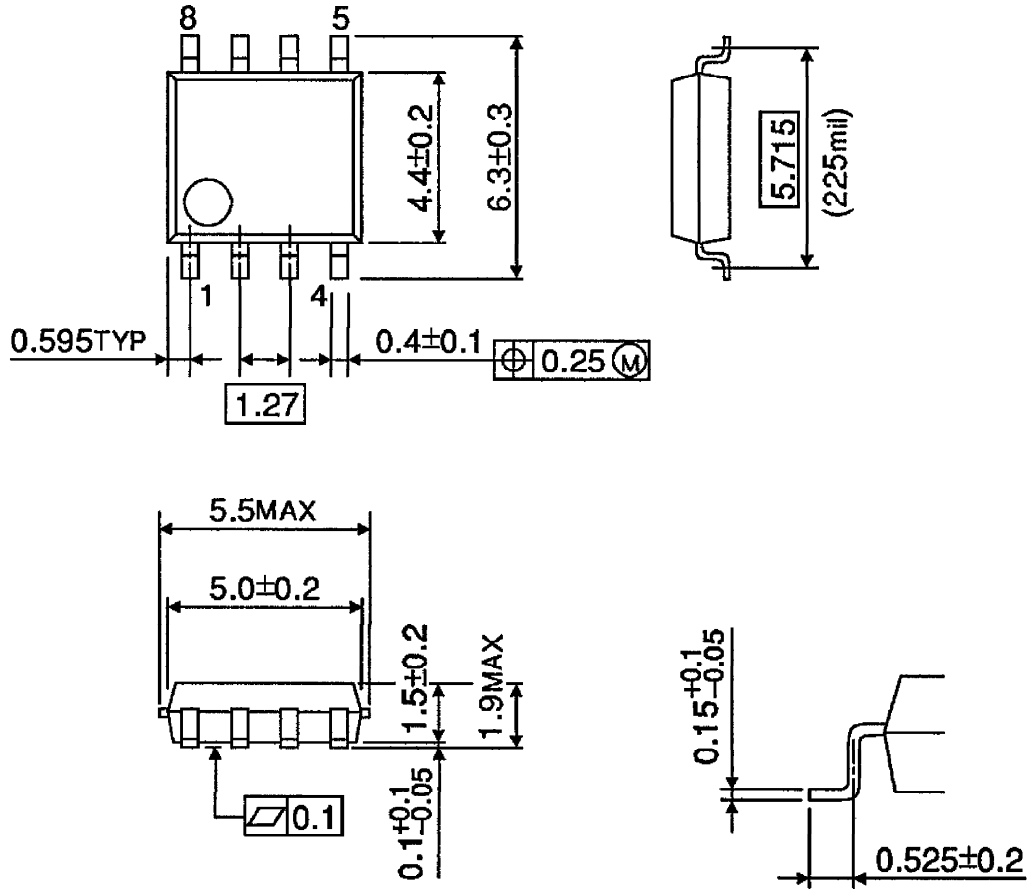
Unit : mm



Weight : 0.7g (Typ.)

OUTLINE DRAWING  
SOP8-P-225-1.27

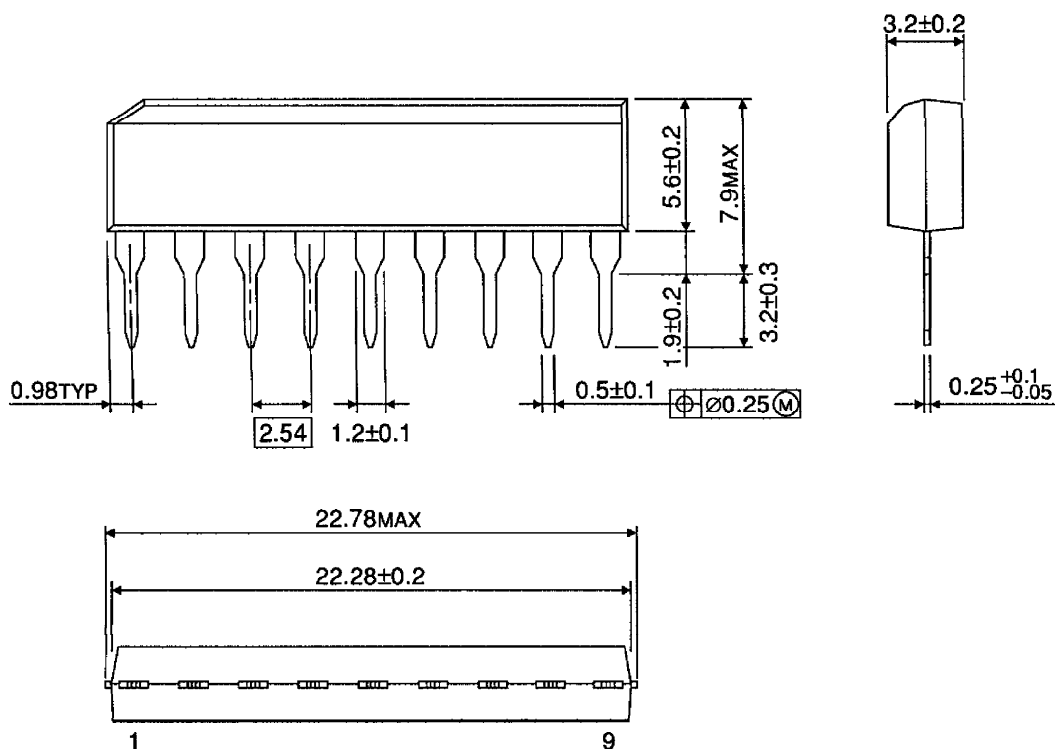
Unit : mm



Weight : 0.1g (Typ.)

**OUTLINE DRAWING**  
SIP9-P-2.54A

Unit : mm



Weight : 0.9g (Typ.)